

### **REMARKS**

Favorable reconsideration, reexamination, and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks.

#### **Personal Interview**

Applicant and the undersigned wish to thank Examiner Nguyen for the courteous and productive interview conducted on October 18, 2007 with the inventor, Dr. Kiril Pandelisev, and Applicant's representative. A summary of the subject matter and any agreements made during the personal interview are incorporated into the following remarks.

#### **Specification**

In the Office Action, beginning at page 2, the specification is objected to for allegedly including new matter in paragraphs [0004]-[0006] describing the following:  $0.3 \leq X \leq 1$ . The present Amendment removes the objected to language, therefore making the objection moot. Withdrawal of the objection is respectfully requested.

#### **All Claims Define Allowable Subject Matter**

In the Office Action, beginning at page 2, Claims 389-396, 399-401, and 405 were rejected under 35 U.S.C. §102(b), as reciting subject matter that is allegedly anticipated by U.S. Patent No. 3,951,587, issued to Alliegro *et al.* ("Alliegro"). This rejection is respectfully traversed for the following reasons.

*Alliegro* describes a silicon carbide boat impregnated with an outer coating of silicon metal. According to *Alliegro*, the silicon metal outer sintered coating can be in the amount of from 5 to 30 percent by weight (See Column 4, lines 63-67 of *Alliegro*).

By contrast, claim 389 includes the feature of a wafer boat preform consisting of the various materials as listed in claim 1. In particular, the wafer boat preform can consist of silicon,

and can consist of silicon and silicon carbide wherein silicon is a majority. *Alliegro* discloses the use of a silicon carbide coated or sintered with a silicon metal, wherein the silicon metal is in the amount of from 5 to 30 percent by weight. Thus, *Alliegro* fails to anticipate each and every feature of Applicant's claim 389.

Claim 393 includes the feature of forming a wafer boat preform consisting of the boat fabrication material as listed in the claim. Again, *Alliegro* discloses the use of a silicon carbide coated or sintered with a silicon metal, wherein the silicon metal is in the amount of from 5 to 30 percent by weight, which is not one of the materials recited in claim 393. Thus, *Alliegro* also fails to anticipate each and every feature of Applicant's claim 393.

Claim 399 includes the feature of forming a wafer boat preform consisting of the boat fabrication material as listed in the claim. Again, *Alliegro* discloses the use of a silicon carbide coated or sintered with a silicon metal, wherein the silicon metal is in the amount of from 5 to 30 percent by weight, which is not one of the materials recited in claim 399. Thus, *Alliegro* cannot anticipate each and every feature of Applicant's claim 399.

As discussed during the personal interview, the use of the recited boat fabrication materials, including a silicon and silicon carbide wherein the silicon is a majority, distinguishes Applicant's claimed invention from the cited art because the use of a majority of silicon permits several advantages over the cited art, including closer matching in thermal qualities with respect to wafers that are to be produced with the wafer boat, varied processing methods that are not available with typical silicon carbide type boats, improved reduction of impurities, and other advantages.

Claim 391 is dependent on claim 389, claims 390, 392, and 394-396 are dependent on claim 393, and claims 400, 401 and 405 are dependent on claim 399. These dependent claims define over the cited for at least the reasons stated above with respect to their respective parent independent claim and for the separate features that they recite.

Because *Alliegro* fails to disclose each and every feature of Applicant's pending Claims

389-396, 399-401, and 405 as described above, withdrawal of the rejection under 35 U.S.C. §102(b) over *Alliegro* is respectfully requested.

Claims 389, 392, 393, 399, 400, and 404-408 were rejected under 35 U.S.C. § 102(b), as reciting subject matters that allegedly are anticipated by U.S. Patent No. 6,395,203, issued to Brun (*Brun*). This rejection is respectfully traversed for the following reasons.

*Brun* describes a process for producing low impurity level ceramic that is similar to *Alliegro* in that a silicon and silicon carbide component is formed by impregnating a body with silicon. Specifically, a shaped carbon body is immersed in molten silicon to convert the carbon in the shaped body to silicon carbide (See Column 4, lines 1-5 of *Brun*).

By contrast, claim 389 includes the feature of a wafer boat preform consisting of the various materials as listed in claim 1. In particular, the wafer boat preform can consist of silicon, and can consist of silicon and silicon carbide wherein silicon is a majority. *Brun* discloses only the use of a silicon impregnated carbon body. Thus, *Brun* cannot anticipate each and every feature of Applicant's claim 389.

Claim 393 includes the feature of forming a wafer boat preform consisting of the boat fabrication material as listed in the claim. Again, *Brun* fails to disclose the feature of forming a wafer boat preform consisting of silicon or consisting of silicon and silicon carbide wherein silicon is a majority, or any of the other silicon materials listed in the claim. Thus, *Brun* cannot anticipate each and every feature of Applicant's claim 393.

Claim 399 includes the feature of forming a wafer boat preform consisting of the boat fabrication material as listed in the claim. Again, *Brun* fails to disclose the feature of forming a wafer boat preform consisting of silicon or consisting of silicon and silicon carbide wherein silicon is a majority, or any of the other silicon materials listed in claim 399. Thus, *Brun* cannot anticipate each and every feature of Applicant's claim.

Claim 410 includes the feature of selecting a silicon material from the group consisting of Si, Si and SiC wherein silicon is a majority,  $\text{Si}_x\text{Ge}_{1-x}$ ,  $\text{Si}_x(\text{SiO}_2)_{1-x}$ ,  $\text{Si}_x(\text{Oxide})_{1-x}$ ,  $\text{Si}_x\text{M}_{1-x}$ , and  $\text{Si}_x\text{A}_{1-x}$ , wherein M is a metal, A is a metal alloy, and  $0 < x < 1$ . In addition, claim 410 includes the feature of casting the silicon material including melting the silicon material and shaping the silicon material. *Brun* discloses the use of a carbon body that is immersed in silicon, resulting in a silicon and silicon carbide. Although *Brun* discloses vacuum casting a crushed carbon that includes epoxy, etc., into a silicone mold (please see column 6 lines 8-26 of *Brun*), as discussed during the personal interview, this type of casting results in shaping the carbon particles into a particular orientation, but does not include melting the silicon material and shaping the silicon material as recited in claim 410. Also, as discussed during the personal interview, it was noted that silicon carbide does not melt, but rather sublimates. Thus, *Brun* fails to disclose at least the above-referenced features of Applicant's claim 410. For at least the above reasons, it is submitted that *Brun* cannot anticipate each and every feature of Applicant's claim 410.

During the personal interview, it was discussed that the use of the recited boat fabrication materials, including a silicon and silicon carbide wherein the silicon is a majority, distinguishes Applicant's claimed invention from the cited art because the use of a majority of silicon permits several advantages over the cited art, including closer matching in thermal qualities with respect to wafers that are to be produced with the wafer boat, varied processing methods that are not available with typical silicon carbide type boats, improved reduction of impurities, and other advantages.

Claim 391 is dependent on claim 389, claims 390, 392, and 394-396 are dependent on claim 393, claims 400-408 are dependent on claim 399, and claims 416-418 are dependent on claim 410. These dependent claims define over the cited for at least the reasons stated above with respect to their respective parent independent claim and for the separate features that they recite.

Because *Brun* fails to disclose each and every feature of Applicant's pending Claims 389-

408, 410, and 416-418 as described above, withdrawal of the rejection under 35 U.S.C. § 102(b) over *Brun* is respectfully requested.

In the Office Action, beginning at page 5, Claims 411-413 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over the Brun '203 patent in view of U.S. Patent No. 6,835,633 to Boyd (*Boyd*). This rejection is respectfully traversed for at least the following reasons.

*Boyd* fails to make up for the above noted deficiencies of Brun. Specifically, *Boyd* fails to disclose or teach, either alone or in combination with *Brun*, at least the features of selecting a silicon material from the group consisting of Si, Si and SiC wherein silicon is a majority,  $\text{Si}_x\text{Ge}_{1-x}$ ,  $\text{Si}_x(\text{SiO}_2)_{1-x}$ ,  $\text{Si}_x(\text{Oxide})_{1-x}$ ,  $\text{Si}_x\text{M}_{1-x}$ , and  $\text{Si}_x\text{A}_{1-x}$ , wherein M is a metal, A is a metal alloy, and  $0 < x < 1$ , or the feature of casting the silicon material including melting the silicon material and shaping the silicon material. Because neither of the references, either alone or in combination, disclose or teach each and every feature of Applicant's claims, the rejection based on *Brun* in view of *Boyd* is in error. Withdrawal of the rejection under U.S.C. § 103(a) over *Brun* in view of *Boyd* is respectfully requested.

Claims 407, 408, 414, and 415 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over the Brun '203 patent in view of U.S. Patent No. 6,056,123 to Niemierowski (*Niemierowski*). This rejection is respectfully traversed for at least the following reasons.

*Niemierowski* fails to make up for the above noted deficiencies of *Brun*. Specifically, with respect to claims 414 and 415, *Niemierowski* fails to disclose or teach, either alone or in combination with *Brun*, at least the features of selecting a silicon material from the group consisting of Si, Si and SiC wherein silicon is a majority,  $\text{Si}_x\text{Ge}_{1-x}$ ,  $\text{Si}_x(\text{SiO}_2)_{1-x}$ ,  $\text{Si}_x(\text{Oxide})_{1-x}$ ,  $\text{Si}_x\text{M}_{1-x}$ , and  $\text{Si}_x\text{A}_{1-x}$ , wherein M is a metal, A is a metal alloy, and  $0 < x < 1$ , or the feature of casting the silicon material including melting the silicon material and shaping the silicon material.

With respect to claims 407 and 408, *Niemierowski* also fails to make up for the

deficiencies of *Brun*. Specifically, *Niemerowski* fails to disclose or teach, either alone or in combination with *Brun*, at least the features of forming a wafer boat preform consisting of the boat fabrication material as listed in the claim. *Brun* and *Niemerowski* either alone or in combination fail to disclose the feature of forming a wafer boat preform consisting of silicon or consisting of silicon and silicon carbide wherein silicon is a majority, or any of the other silicon materials listed in claim 399.

Because neither of the references, either alone or in combination, disclose or teach each and every feature of Applicant's claims, the rejection of claims 407, 408, 414 and 415 based on *Brun* in view of *Niemerowski* is in error. Withdrawal of the rejection under U.S.C. § 103(a) over *Brun* in view of *Niemerowski* is respectfully requested.

## Conclusion

For at least the foregoing reasons, Applicant respectfully submits that this patent application is in condition for allowance. An early indication of the allowability of the patent application is therefore respectfully solicited.

If Examiner Nguyen believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, she is invited to call on the number below.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is hereby authorized to charge fees necessitated by this paper, and to credit all refunds and overpayments, to the Deposit Account listed in the Amendment After Final filed in this application on March 15, 2007.

Respectfully submitted,  
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